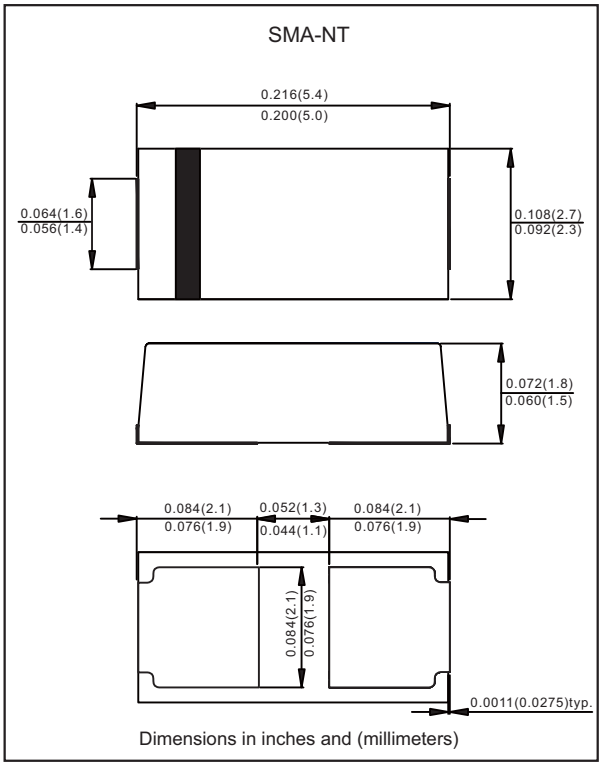
ASAK5NT-Q1 Series

1500W Dual Flat No-Lead Unidirectional and Bidirectional Transient Voltage Suppressors 40V-800V

Features

- Well package design with solder pad on the bottom for best thermal performance
- Leads on two opposing sides of the body
- 1500W peak pulse power capability with a 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Uni and Bidirectional unit
- Glass passivated chip junction
- Excellent clamping capability
- Low incremental surge resistance
- Lead-free parts meet RoHS requirements
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Package outline



Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SMA-NT
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band(Uni-directional types only)
- Mounting Position : Any

Maximum ratings (AT T_A=25°C unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Peak power dissipation	with a 10/1000μs waveform, Note 1, 2 & Fig. 1	P_{PPM}	1500	W
Peak pulse current	with a 10/1000μs waveform	I_{PPM}	See Table	A
Steady state power dissipation	at T_L=75°C, Note 2	$P_{M(AV)}$	3.5	W
Typical thermal resistance	Junction to case Junction to ambient	$R_{\theta JC}$ $R_{\theta JA}$	28 48	°C/W
Operating junction temperature range		T_J	-55 to +150	°C
Storage temperature range		T_{STG}	-65 to +175	°C

Notes 1: Non-repetitive current pulse, per Fig. 3 and derated above T_A=25°C per Fig. 2
2: Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5

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Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No. (Uni)	Part No. (Bi)	Reverse Stand-off Voltage	Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage @I_{PP}		Maximum Reverse Leakage Current	Marking Code	
		V_{RWM}	$V_{BR\,Min}$	$V_{BR\,Max}$	I_T	V_C	I_{PP}	I_R@V_{RWM}		
		Volts	Volts	Volts	mA	Volts	A	μA	Uni	Bi
ASAK5NT40A-Q1	ASAK5NT40CA-Q1	40	44.4	49.1	1.0	64.5	23.2	5	K5CR	K5YR
ASAK5NT43A-Q1	ASAK5NT43CA-Q1	43	47.8	52.8	1.0	69.4	21.6	5	K5CT	K5YT
ASAK5NT45A-Q1	ASAK5NT45CA-Q1	45	50.0	55.3	1.0	72.7	20.4	5	K5CV	K5YV
ASAK5NT48A-Q1	ASAK5NT48CA-Q1	48	53.3	58.9	1.0	77.4	19.4	5	K5CX	K5YX
ASAK5NT51A-Q1	ASAK5NT51CA-Q1	51	56.7	62.7	1.0	82.4	18.2	5	K5CZ	K5YZ
ASAK5NT54A-Q1	ASAK5NT54CA-Q1	54	60.0	66.3	1.0	87.1	17.2	5	K5RE	K5ZE
ASAK5NT58A-Q1	ASAK5NT58CA-Q1	58	64.4	71.2	1.0	93.6	16.0	5	K5RG	K5ZG
ASAK5NT60A-Q1	ASAK5NT60CA-Q1	60	66.7	73.7	1.0	96.8	15.5	5	K5RK	K5ZK
ASAK5NT64A-Q1	ASAK5NT64CA-Q1	64	71.1	78.6	1.0	103	14.5	5	K5RM	K5ZM
ASAK5NT70A-Q1	ASAK5NT70CA-Q1	70	77.8	86.0	1.0	113	13.2	5	K5RP	K5ZP
ASAK5NT75A-Q1	ASAK5NT75CA-Q1	75	83.3	92.1	1.0	121	12.4	5	K5RR	K5ZR
ASAK5NT78A-Q1	ASAK5NT78CA-Q1	78	86.7	95.8	1.0	126	11.9	5	K5RT	K5ZT
ASAK5NT85A-Q1	ASAK5NT85CA-Q1	85	94.4	104	1.0	137	10.9	5	K5RV	K5ZV
ASAK5NT90A-Q1	ASAK5NT90CA-Q1	90	100	111	1.0	146	10.2	5	K5RX	K5ZX
ASAK5NT100A-Q1	ASAK5NT100CA-Q1	100	111	123	1.0	162	9.3	5	K5RZ	K5ZZ
ASAK5NT110A-Q1	ASAK5NT110CA-Q1	110	122	135	1.0	177	8.4	5	K5SE	K5VE
ASAK5NT120A-Q1	ASAK5NT120CA-Q1	120	133	147	1.0	193	7.7	5	K5SG	K5VG
ASAK5NT130A-Q1	ASAK5NT130CA-Q1	130	144	159	1.0	209	7.1	5	K5SK	K5VK
ASAK5NT150A-Q1	ASAK5NT150CA-Q1	150	167	185	1.0	243	6.2	5	K5SM	K5VM
ASAK5NT160A-Q1	ASAK5NT160CA-Q1	160	178	197	1.0	259	5.7	5	K5SP	K5VP
ASAK5NT170A-Q1	ASAK5NT170CA-Q1	170	189	209	1.0	275	5.4	5	K5SR	K5VR
ASAK5NT180A-Q1	ASAK5NT180CA-Q1	180	201	222	1.0	292	5.1	5	K5ST	K5VT
ASAK5NT200A-Q1	ASAK5NT200CA-Q1	200	224	247	1.0	324	4.6	5	K5SV	K5VV
ASAK5NT220A-Q1	ASAK5NT220CA-Q1	220	246	272	1.0	356	4.2	5	K5SX	K5VX
ASAK5NT250A-Q1	ASAK5NT250CA-Q1	250	279	309	1.0	405	3.71	5	K5SZ	K5VZ
ASAK5NT300A-Q1	ASAK5NT300CA-Q1	300	335	371	1.0	486	3.09	5	K5TE	K5UE
ASAK5NT350A-Q1	ASAK5NT350CA-Q1	350	391	432	1.0	567	2.65	5	K5TG	K5UG
ASAK5NT400A-Q1	ASAK5NT400CA-Q1	400	447	494	1.0	648	2.32	5	K5TK	K5UK
ASAK5NT440A-Q1	ASAK5NT440CA-Q1	440	492	544	1.0	713	2.11	5	K5TM	K5UM
ASAK5NT500A-Q1	ASAK5NT500CA-Q1	500	558	618	1.0	810	1.86	5	K5TP	K5UP
ASAK5NT550A-Q1	ASAK5NT550CA-Q1	550	614	680	1.0	891	1.69	5	K5TR	K5UR
ASAK5NT600A-Q1	ASAK5NT600CA-Q1	600	670	741	1.0	971	1.55	5	K5TT	K5UT
ASAK5NT650A-Q1	ASAK5NT650CA-Q1	650	726	803	1.0	1052	1.43	5	K5TV	K5UV
ASAK5NT700A-Q1	ASAK5NT700CA-Q1	700	782	865	1.0	1133	1.33	5	K5TX	K5UX
ASAK5NT750A-Q1	ASAK5NT750CA-Q1	750	837	927	1.0	1213	1.24	5	K5TZ	K5UZ
ASAK5NT800A-Q1	ASAK5NT800CA-Q1	800	893	989	1.0	1298	1.16	5	K5XE	K5YE

Notes 1: Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices

2: Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 6 & Fig. 7

Rating and characteristic curves

Fig.1 - Pealk Pulse Power Rating Curve

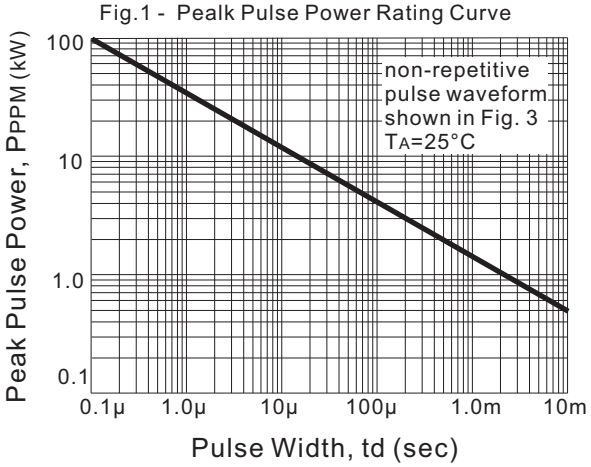


Fig.2 - Pulse Derating Curve

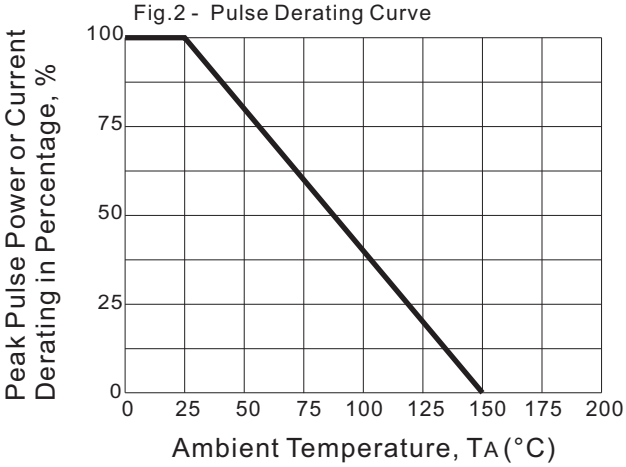


Fig.3 - Pulse Waveform

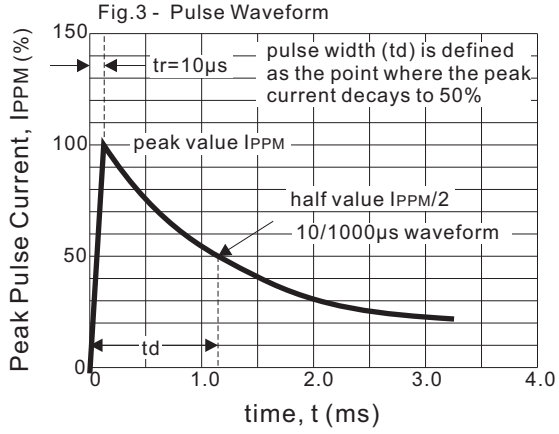


Fig.4 - Typical Junction Capacitance

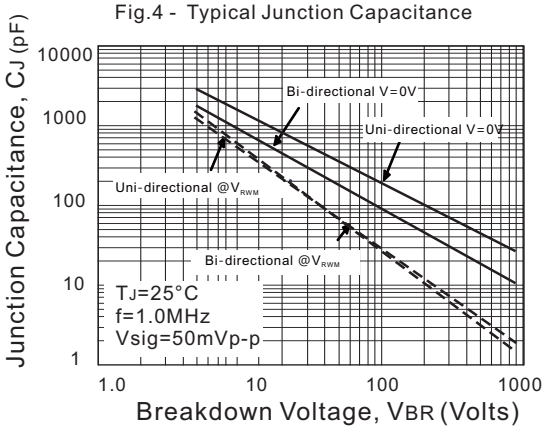
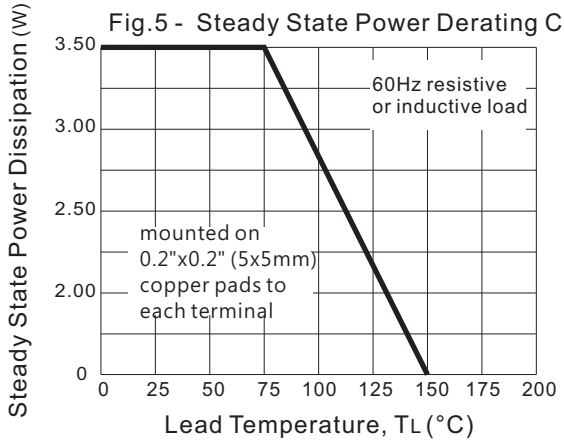


Fig.5 - Steady State Power Derating Curve



Rating and characteristic curves

Fig. 6 - Transients of several thousand volts can be clamped to a safe level by the TVS

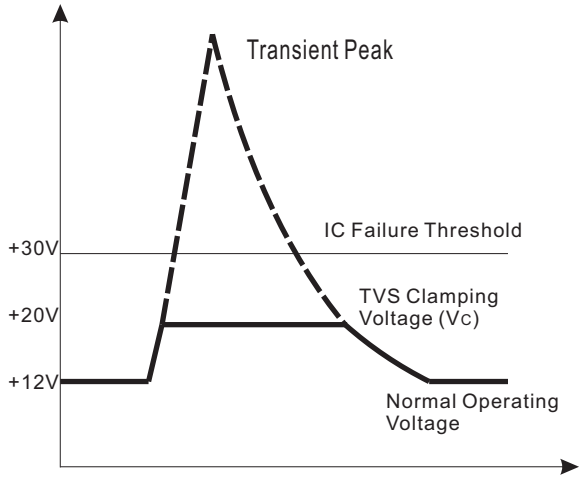
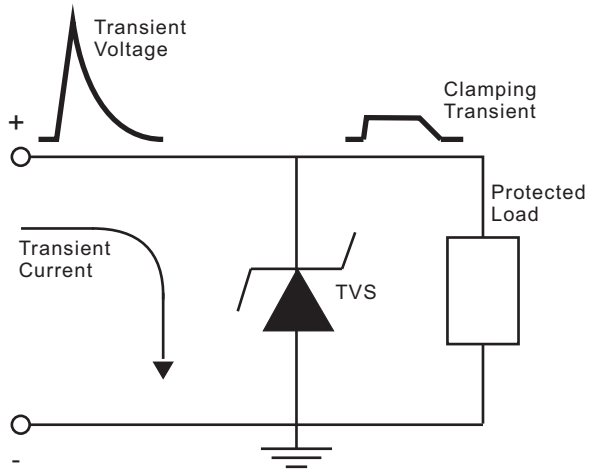


Fig. 7 - Transient current is divered to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level



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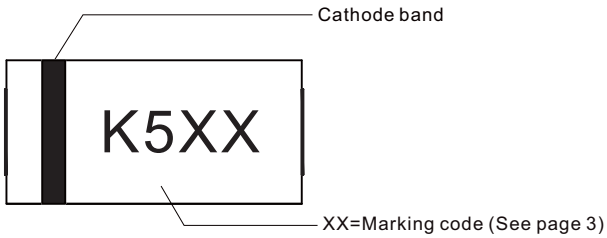
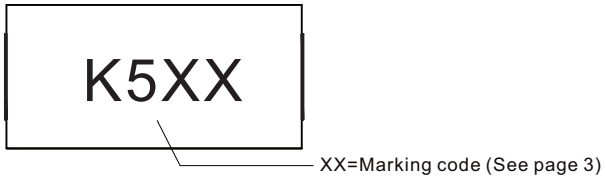
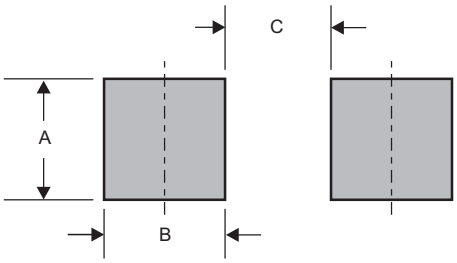
Pinning information

Pin	Simplified outline	Symbol
Uni-Directional Pin1 cathode Pin2 anode		
Bi-Directional		

Marking

Type number	Example
Uni-Directional	
Bi-Directional	

Suggested solder pad layout



Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SMA-NT	0.084 (2.10)	0.084 (2.10)	0.044 (1.10)